

ABSTRACT OF THE DISCLOSURE

A crystallization apparatus includes an illumination optical system to illuminate a phase shift mask and which irradiates an amorphous semiconductor film with a light beam having an intensity distribution of an inverse peak type having a smallest light intensity in a point corresponding to a phase shift portion of the phase shift mask to generate a crystallized semiconductor film. A convergence/divergence element is disposed on a light path between the illumination optical system and phase shift mask. The convergence/divergence element converts the light beam supplied from the illumination optical system into a light beam having an upward concave intensity distribution in which the light intensity is lowest in the phase shift portion and in which the light intensity increases as distant from the phase shift portion to irradiate the phase shift mask.